

ORDINANCE NO. 2014-02
MULTI-STOP SIGN AT LAKESIDE DRIVE AND WILD OAK FOREST LANE

AN ORDINANCE AMENDING THE CODE OF ORDINANCES OF THE CITY OF SEABROOK, CHAPTER 90 "TRAFFIC AND VEHICLES" ARTICLE I, "IN GENERAL", SECTION 90-5 "STOP SIGNS DESIGNATED"; BY REVISING NAME OF SUBSECTION (1), "FOUR WAY STOPS" TO "MULTI-WAY STOPS," AND ADDING A NEW MULTI-WAY STOP AT THE INTERSECTION OF LAKESIDE DRIVE AND WILD OAK FOREST LANE; PROVIDING FOR A PENALTY IN AN AMOUNT OF NOT MORE THAN TWO HUNDRED DOLLARS (\$200.00), OR THE MAXIMUM AMOUNT PERMITTED BY LAW, FOR VIOLATION OF ANY PROVISIONS HEREOF BY INCLUSION INTO THE CODE; REPEALING ALL ORDINANCES OR PARTS OF ORDINANCES INCONSISTENT OR IN CONFLICT HERewith; PROVIDING FOR SEVERABILITY AND NOTICE.

WHEREAS, the City Council of the City of Seabrook, after hearing reports of concerned citizens, and after requesting evaluation by the City Engineer, has determined the need for additional multi stop signs on Lakeside Drive, at the intersections of Wild Oak Forest Lane ("Intersection"), and

WHEREAS, although not otherwise required by law, the City has required such investigations and studies as are appropriate and necessary to determine the need for the multi stops at the subject Intersection; and

WHEREAS, in accordance with the requirements of good engineering practices, the City Engineer has made such investigations and studies as are appropriate and necessary to determine the potential need for the stop signs at the subject Intersection and has rendered an opinion and evaluation approving the placement of such stops, which is attached hereto and marked Exhibit "A", and

WHEREAS, the City Council of the City of Seabrook, has determined the necessity for this Ordinance in order to preserve the health, safety and well-being of the residents, citizens and inhabitants of the municipality;

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF SEABROOK, STATE OF TEXAS:

SECTION 1. FINDINGS OF FACT.

The facts and matters set forth in the preamble of this Ordinance are hereby found to be true and correct.

SECTION 2. AMENDMENT TO THE CODE.

The Seabrook City Code, Chapter 90 "Traffic and Vehicles", Article I. "In General", Section 90-5 entitled "Stop Signs Designated", [and] is amended by revising title of subsection (1) "Four-way stops," to now be entitled "Multi-way stops" and adding new multi stop at Lakeside Drive and Wild Oak Forest Lane as follows:

"Sec. 90-5. Stop Signs Designated.

All stop signs presently in existence as of January 1, 2009 that are located on city streets, as provided herein and in substantial compliance with the Texas Manual on Uniform Traffic Control Devices, are hereby adopted in the Code for enforcement. Any person operating an automobile or other vehicle upon the streets of the city shall, prior to entering any of the intersections designated where stop signs are located, come to a complete stop before proceeding into the intersection.

The City Manager shall be responsible for maintaining a current inventory of all such traffic control devices. It shall not be a defense to prosecution for violating a traffic control device that a sign/signal does not comply with the Texas Manual on Uniform Traffic Control Devices, or that the sign/signal is not in the inventory maintained by the director of public works, if (1) the sign/signal substantially complied with the manual, or (2) the defendant had actual notice of the sign/signal. The following traffic control devices (stop signs) are determined necessary for traffic safety and in the general public interest for the health, safety and welfare of the city:

(1) **Multi-way stops** [~~Four-way stops~~]. Stop signs indicating multi-way [~~four-way~~] stops shall be placed at the following locations within the city:

Lakeside Drive and Hampton Springs Drive

Lakeside Drive and Scenic Shore Drive.

Lakeside Drive and Wild Oak Forest Lane."

SECTION 3. PENALTY CLAUSE; INCLUSION INTO THE CODE.

This Ordinance is hereby incorporated into and made a part of the Seabrook City Code. Any person who shall violate any provision of this Ordinance shall be deemed guilty of a misdemeanor and, upon conviction, shall be fined in an amount not more than [Five] Two Hundred Dollars (\$200.00) per offense or the maximum amount permitted by law. Each violation shall constitute a separate offense.

93
94 **SECTION 4. REPEAL OF CONFLICTING ORDINANCES.**
95

96 All ordinances or parts of ordinances inconsistent or in conflict herewith are,
97 to the extents of such inconsistency or conflict, hereby repealed.
98

99 **SECTION 5. SEVERABILITY.**
100

101 In the event any clause, phrase, provision, sentence, or any part of this
102 Ordinance or the application of the same to any person or circumstances shall for
103 any reason be adjudged invalid or held unconstitutional by a court of competent
104 jurisdiction, it shall not affect, impair, or invalidate this Ordinance as a whole or any
105 part or provision hereof other than the part declared to be invalid or unconstitutional;
106 and the City Council of the City of Seabrook, Texas, declares that it would have
107 passed each and every part of the same notwithstanding the omission of any such
108 part thus declared to be invalid or unconstitutional, whether there be one or more
109 parts.
110

111 **SECTION 6. NOTICE BY PUBLICATON**
112

113 The City Secretary shall give notice of the enactment of this Ordinance by
114 promptly publishing it or its descriptive caption and penalty after final passage in the
115 official newspaper of the City consistent with the City Code of Ordinances and
116 Charter; the Ordinance to take effect upon publication and posting of signs in
117 accordance with law.
118

119 **SECTION 7. NOTICE BY ERECTION OF SIGNALS**
120

121 This Ordinance shall not become effective until appropriate placement of stop
122 signage to establish and provide additional notice of the establishment of the subject
123 stop locations as provided for herein.
124

125
126 PASSED AND APPROVED on first reading on this 4th day of February, 2014.
127

128 PASSED, APPROVED, AND ADOPTED on second and final reading on this
129 18th day of February, 2014.
130

131
132
133 By: 
134 _____
135 Glenn Royal
136 Mayor
137
138

139
140 ATTEST:
141

142
143
144 By: Michele L. Glaser
145 Michele L. Glaser, TRMC
146 City Secretary
147

148
149 APPROVED AS TO FORM:
150

151
152
153 By: Steven L. Weathered
154 Steven L. Weathered
155 City Attorney
156
157
158
159



Cobb, Fendley & Associates, Inc.

TBPE Firm Registration No. 274 | TBPLS Firm Registration No. 100467

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Phone 281.993.4952 | Fax 281.993.8086

Ordinance No. 2014-02

Exhibit A

Technical Memorandum

Date January 15, 2014

To City of Seabrook

From Brian Castille, PE

Subject Lakeside Dr at Seaward Dr & Lakeside Dr at Wild Oak Forest Ln Multi-Way Stop Analysis

Introduction

Cobb, Fendley & Associates, Inc. has been requested by the City of Seabrook to provide a technical memorandum to outline the findings from the intersection analysis and the determination for the need of multi-way stop control at the intersections of Lakeside Dr at Seaward Dr and Lakeside Dr at Wild Oak Forest Ln in Seabrook, Texas.

Assumptions

For the purpose of this memorandum, Lakeside Dr is a north/south street with a posted speed limit of 30 miles per hour. Seaward Dr and Wild Oak Forest Ln are both east / west streets.

Data Collection

Data collection was performed at both intersections on December 4, 2013. It is attached to this memorandum.

Multi-Way Stop Analysis

Three different conditions were evaluated in the multi-way stop analysis which are traffic volumes, roadway characteristics and intersection sight distance. If at least one condition meets criteria set forth in the 2011 edition of the Texas Manual on Uniform Traffic Control Devices (TMUTCD), a multi-way stop is warranted. Installation of a multi-way stop is based it being warranted and on engineering judgment.

Traffic Volumes

According to the procedures outlined in the 2011 edition of the TMUTCD, a multi-way stop is warranted when the average number of vehicles on both approaches of the major street is 300 vehicles per hour and is 200 vehicles per hour for both approaches on the minor street for those same eight hours. Due to traffic volumes at both intersections not meeting this criteria, a multi-way stop is not warranted at either intersection.

Roadway Characteristics

If two intersecting roadways are of similar design and characteristics, a multi-way stop may be warranted. Since Lakeside Dr is a collector street and both Seaward Dr and Wild Oak Forest Ln are residential streets, the design and operating characteristics are completely different. Therefore, a multi-way stop is not warranted at either intersection.

Intersection Sight Distance

A multi-way stop may be warranted at an intersection if there is an obstruction such as a fence that restricts a driver's line of sight when turning onto a roadway where cross traffic does not have to stop

at the intersection. Any potential obstructions are identified utilizing existing aerial photography and photographs taken at the site.

At the intersection of Lakeside Dr at Wild Oak Forest Ln, an intersection sight distance analysis was performed. **Figure 1** shows the view from westbound Wild Oak Forest Ln looking south on Lakeside Dr.



Figure 1 - On Westbound Wild Oak Forest Ln looking south on Lakeside Dr

An intersection sight distance analysis was performed utilizing methods outlined in the 2011 edition of the AASHTO "Green Book". In order for a driver in a passenger car to be able to turn left across Lakeside Dr and head south, it would require a clear sight distance of 335' as shown in **Figure 2**. The fence blocks the driver's view of Lakeside Dr where they do not have enough sight distance to be able to make a left turn across Lakeside Dr. Due to this, a multi-way stop is warranted and recommended for this intersection.



Figure 2 – Lakeside Dr at Wild Oak Forest Ln Sight Triangle

At the intersection of Lakeside Dr at Seaward Dr, an intersection sight distance analysis was performed. **Figure 3** shows the view from northbound Lakeside Dr looking north towards Seaward Dr.



Figure 3 - On Northbound Lakeside Dr looking North Towards Seaward Dr

An intersection sight distance analysis was performed utilizing methods outlined in the 2011 edition of the AASHTO "Green Book". In order for a driver in a passenger car to be able to turn left across Lakeside Dr and head south, it would require a clear sight distance of 375' as shown in **Figure 4**.

According to the analysis, the sight triangle is clear of the edge of the fence on the northeast corner and does not block a driver's view of Lakeside Dr. According to the analysis, they have enough sight distance to be able to make a left turn across Lakeside Dr. Due to this, a multi-way stop is not warranted on intersection sight distance and is not recommended for this intersection. Other intersection sight distance conditions were looked at for this location but this was the condition that was closest to having obstructions within the sight triangle.

Full results of the multi-way stop analysis are attached to this report.



Figure 4 – Lakeside Dr at Seaward Dr Sight Triangle

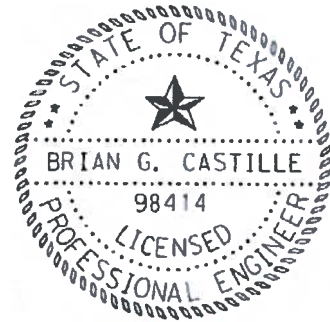
Conclusion

Based on the analysis in this memorandum, a multi-way stop is warranted and recommended for the intersection of Lakeside Dr at Wild Oak Forest Ln. A multi-way stop is not warranted and is not recommended for the intersection of Lakeside Dr at Seaward Dr.

Sincerely,



Brian Castille, PE



1-15-14

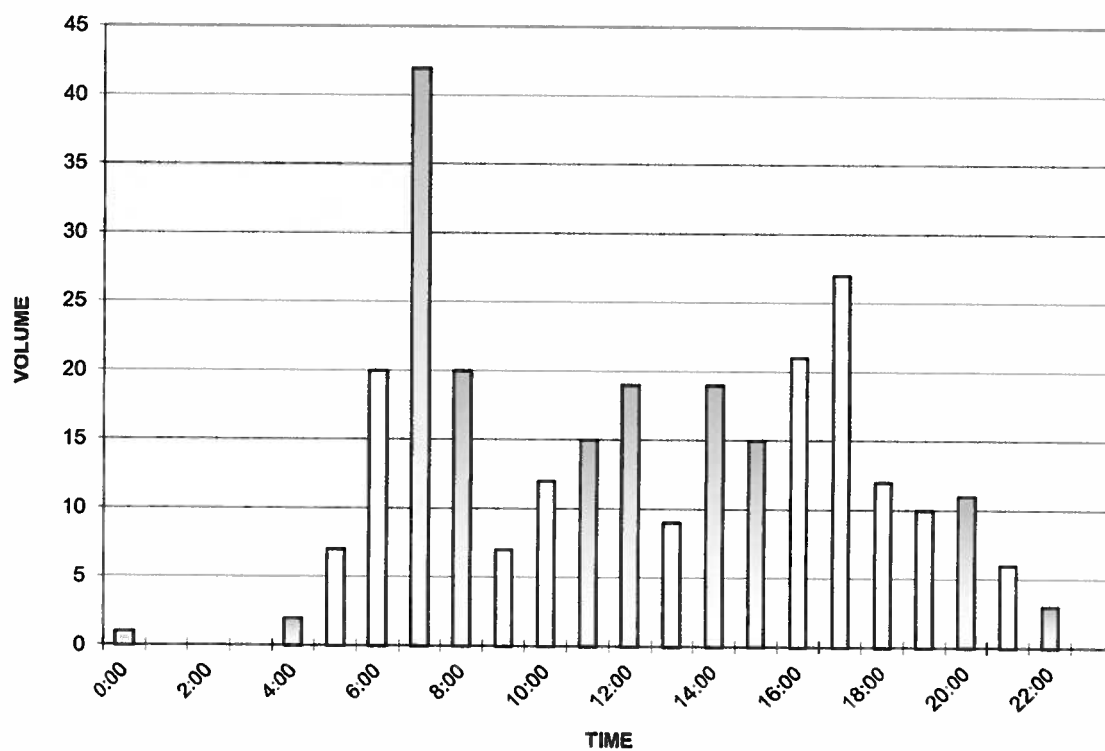
Westbound Wild Oak Forest Lane east of Lakeside Drive

Date Began:
12/4/2013

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	0	0	1	0	1
1:00	0	0	0	0	0
2:00	0	0	0	0	0
3:00	0	0	0	0	0
4:00	0	0	0	2	2
5:00	0	0	5	2	7
6:00	3	4	6	7	20
7:00	10	13	7	12	42
8:00	3	5	4	8	20
9:00	4	0	2	1	7
10:00	1	3	2	6	12
11:00	7	7	0	1	15
12:00	5	4	2	8	19
13:00	0	4	1	4	9
14:00	7	6	2	4	19
15:00	10	1	3	1	15
16:00	3	4	6	8	21
17:00	9	9	4	5	27
18:00	5	2	4	1	12
19:00	0	3	3	4	10
20:00	4	1	1	5	11
21:00	4	0	1	1	6
22:00	1	2	0	0	3
23:00	0	0	0	0	0

TOTAL: 278

The A.M. peak hour from 7:00 to 8:00 is 42
The P.M. peak hour from 16:30 to 17:30 is 32

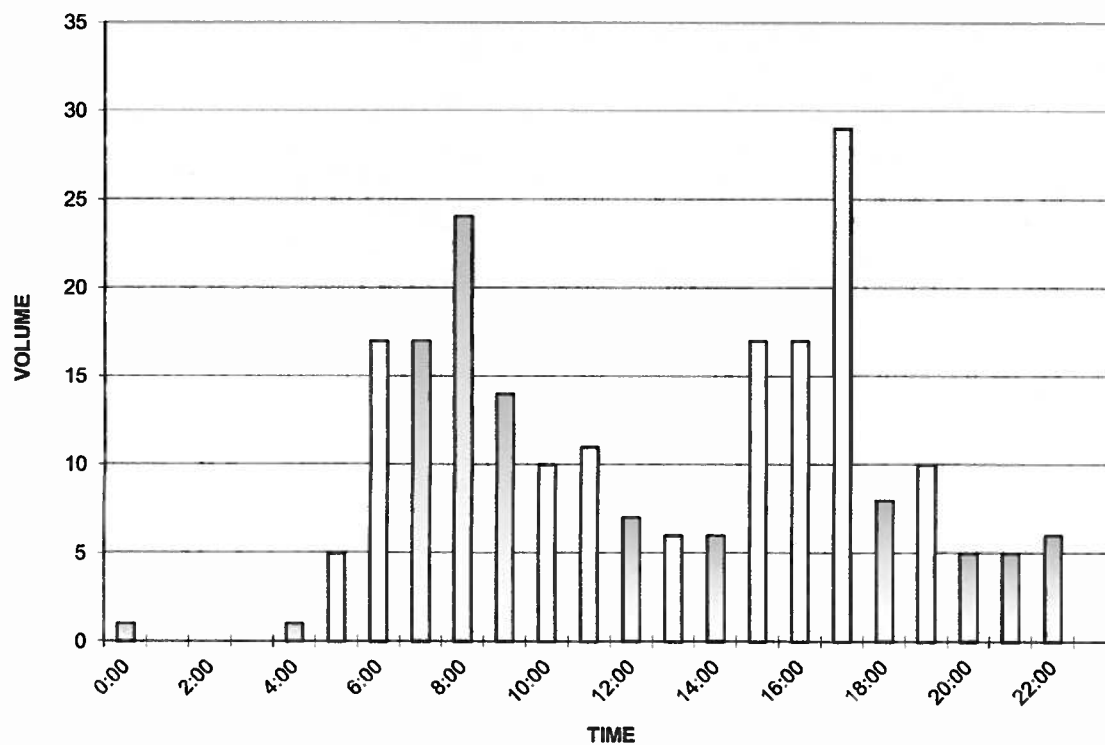


Westbound Seaward Drive east of Lakeside Drive

Date Began:
12/4/2013

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	1	0	0	0	1
1:00	0	0	0	0	0
2:00	0	0	0	0	0
3:00	0	0	0	0	0
4:00	0	1	0	0	1
5:00	0	2	3	0	5
6:00	2	1	10	4	17
7:00	5	5	5	2	17
8:00	5	2	12	5	24
9:00	5	4	5	0	14
10:00	1	2	5	2	10
11:00	4	1	4	2	11
12:00	1	2	3	1	7
13:00	1	2	2	1	6
14:00	0	0	3	3	6
15:00	4	6	2	5	17
16:00	2	4	7	4	17
17:00	9	2	9	9	29
18:00	1	4	2	1	8
19:00	2	2	2	4	10
20:00	0	0	3	2	5
21:00	1	0	2	2	5
22:00	2	2	1	1	6
23:00	0	0	0	0	0
TOTAL:					216

The A.M. peak hour from 8:30 to 9:30 is 26
The P.M. peak hour from 17:00 to 18:00 is 29



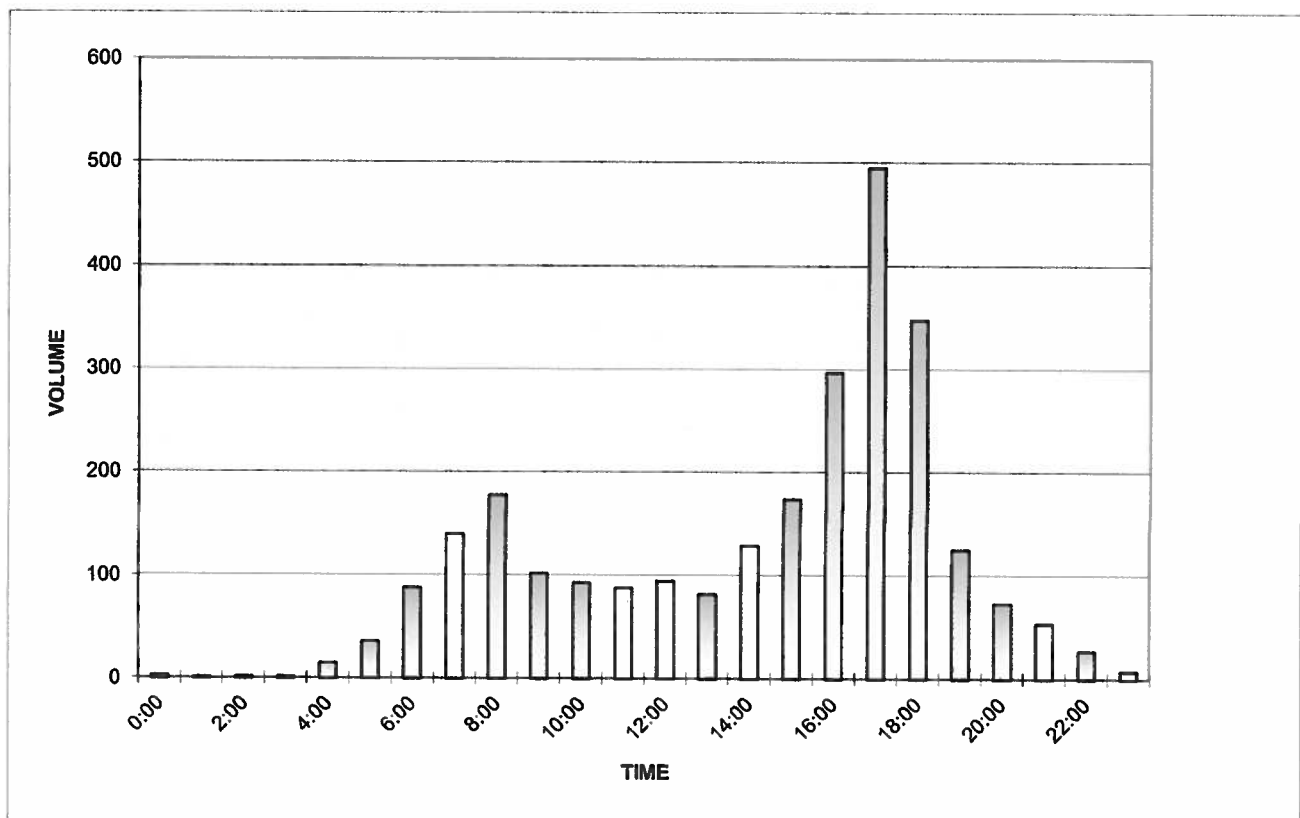
Southbound Lakeside Drive north of Wild Oak Forest Lan

Date Began:
12/4/2013

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	2	0	1	0	3
1:00	0	1	0	0	1
2:00	1	1	0	0	2
3:00	0	0	1	1	2
4:00	0	1	4	10	15
5:00	5	8	12	11	36
6:00	6	14	31	37	88
7:00	34	34	26	46	140
8:00	45	45	48	40	178
9:00	30	25	26	21	102
10:00	22	24	25	22	93
11:00	21	23	16	28	88
12:00	29	22	18	26	95
13:00	22	23	16	21	82
14:00	30	26	28	45	129
15:00	39	35	39	61	174
16:00	50	72	84	91	297
17:00	123	119	128	125	495
18:00	125	118	66	39	348
19:00	33	31	34	27	125
20:00	12	21	24	16	73
21:00	13	16	15	10	54
22:00	10	6	8	3	27
23:00	2	3	0	3	8

TOTAL: 2655

The A.M. peak hour from 7:45 to 8:45 is 184
The P.M. peak hour from 17:15 to 18:15 is 497

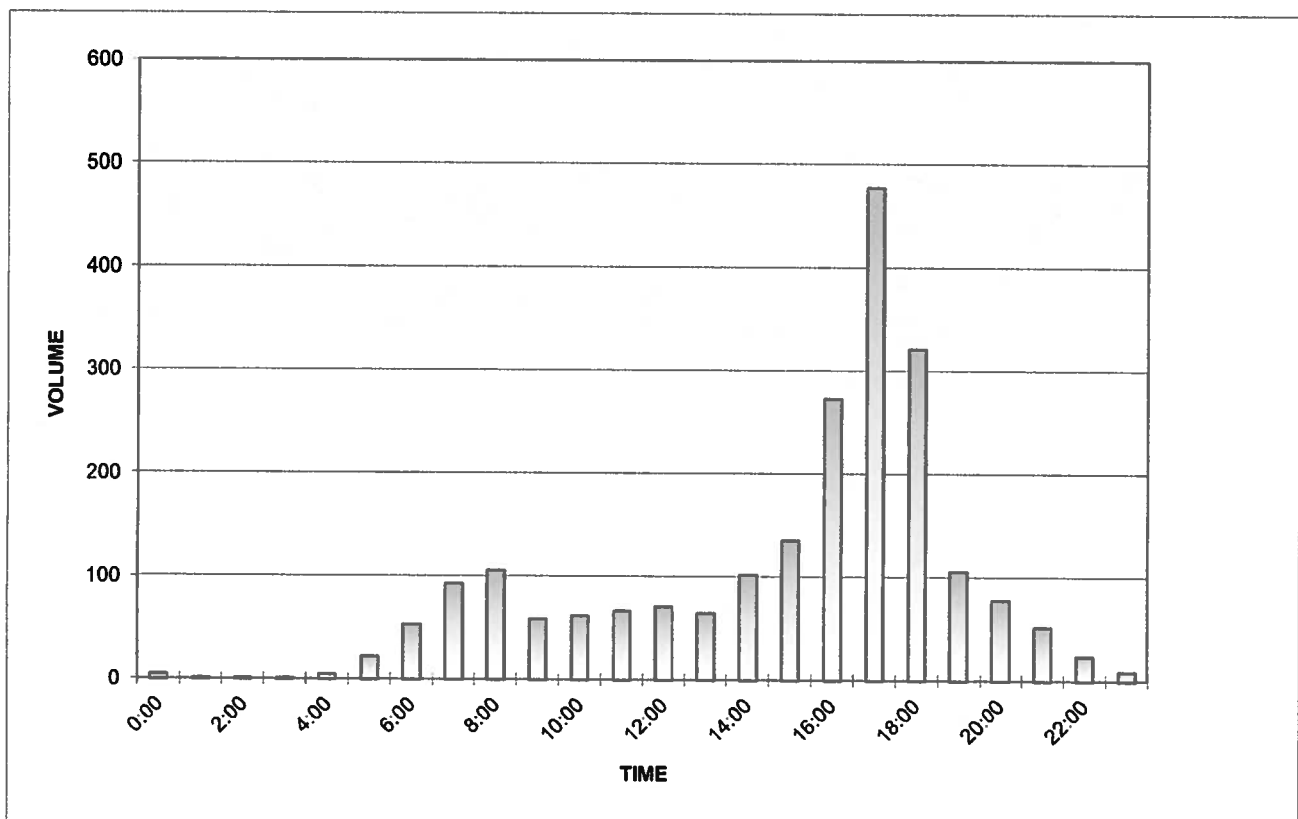


Date Began:
12/4/2013

Southbound Lakeside Drive north of Seaward Drive

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	2	1	1	1	5
1:00	0	0	0	1	1
2:00	1	0	0	0	1
3:00	0	0	1	0	1
4:00	0	0	2	3	5
5:00	5	4	6	7	22
6:00	4	8	21	20	53
7:00	22	23	21	27	93
8:00	23	34	26	23	106
9:00	19	13	13	14	59
10:00	16	12	17	17	62
11:00	17	18	14	18	67
12:00	17	22	12	20	71
13:00	13	21	17	14	65
14:00	23	21	23	35	102
15:00	24	30	36	46	136
16:00	50	62	75	86	273
17:00	117	124	115	121	477
18:00	122	105	56	38	321
19:00	28	23	32	23	106
20:00	16	21	23	18	78
21:00	11	19	13	9	52
22:00	7	6	8	3	24
23:00	2	4	2	1	9
TOTAL:					2189

The A.M. peak hour from 7:45 to 8:45 is 110
The P.M. peak hour from 17:15 to 18:15 is 482



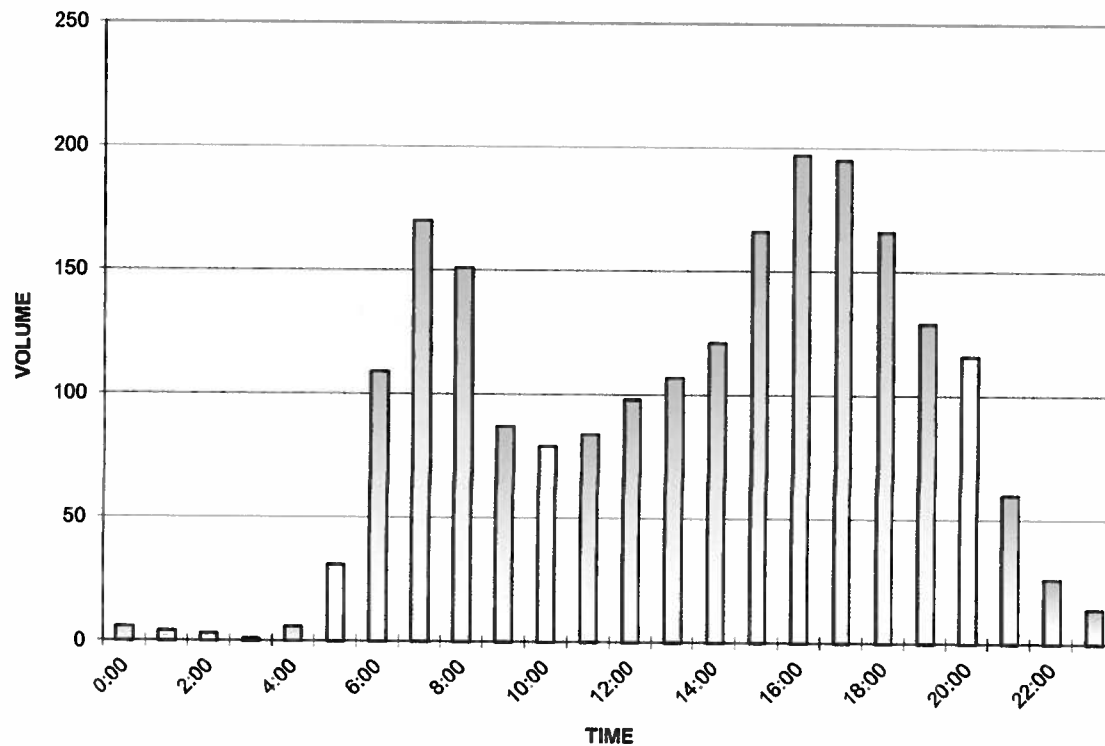
Northbound Lakeside Drive south of Wild Oak Forest Lane

Date Began:
12/4/2013

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	1	2	3	0	6
1:00	0	0	3	1	4
2:00	1	0	2	0	3
3:00	1	0	0	0	1
4:00	2	4	0	0	6
5:00	3	5	11	12	31
6:00	16	28	32	33	109
7:00	35	55	39	41	170
8:00	43	41	37	30	151
9:00	37	15	17	18	87
10:00	19	19	22	19	79
11:00	23	27	14	20	84
12:00	25	24	22	27	98
13:00	21	25	25	36	107
14:00	27	28	35	31	121
15:00	36	48	42	40	166
16:00	37	57	44	59	197
17:00	47	44	53	51	195
18:00	46	40	39	41	166
19:00	33	31	31	34	129
20:00	31	29	29	27	116
21:00	26	16	9	9	60
22:00	6	9	6	5	26
23:00	5	5	3	1	14

TOTAL: 2126

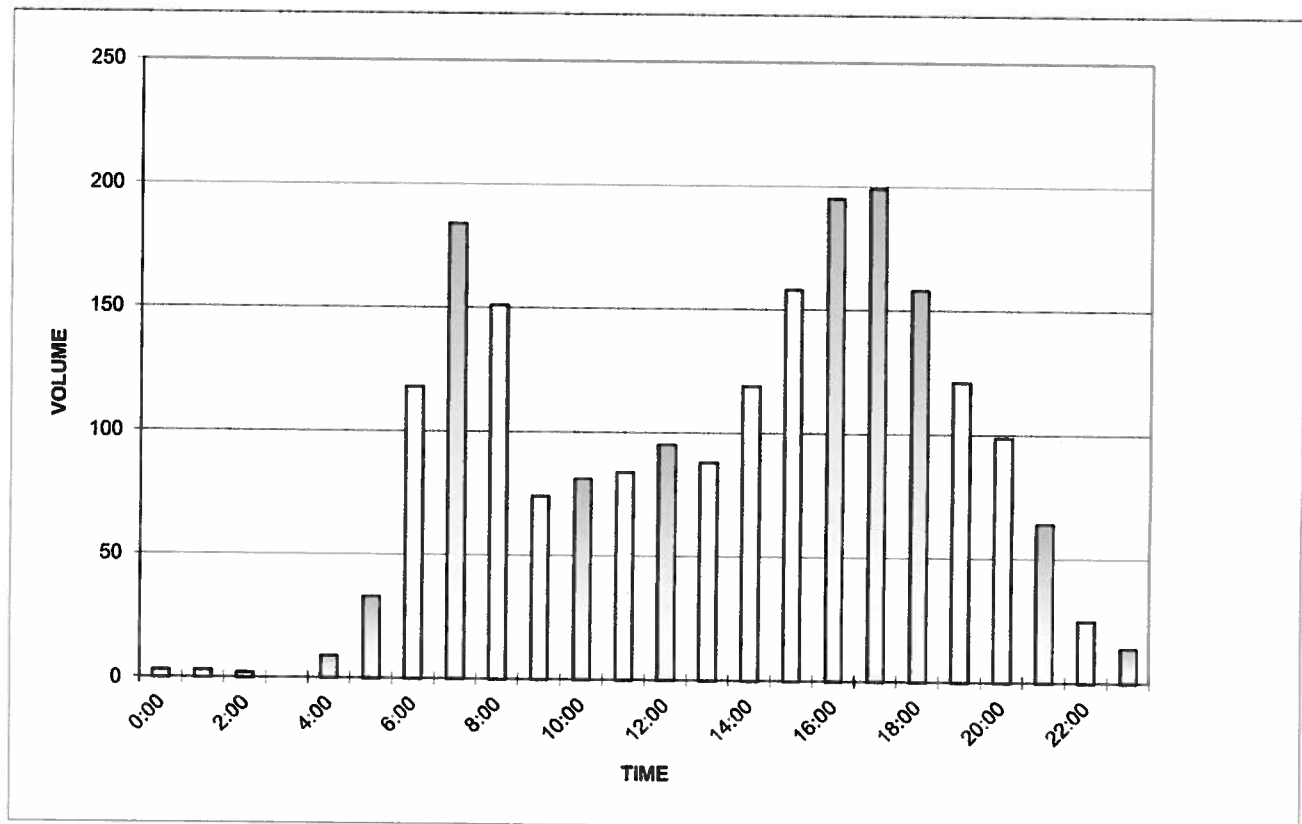
The A.M. peak hour from 7:15 to 8:15 is 178
The P.M. peak hour from 16:15 to 17:15 is 207



Date Began:
12/4/2013

Northbound Lakeside Drive south of Seaward Drive					
TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	0	1	2	0	3
1:00	0	0	2	1	3
2:00	0	0	2	0	2
3:00	0	0	0	0	0
4:00	2	4	0	3	9
5:00	1	4	14	14	33
6:00	17	29	37	35	118
7:00	40	61	44	39	184
8:00	43	45	33	30	151
9:00	26	14	21	13	74
10:00	20	22	20	19	81
11:00	22	27	16	19	84
12:00	25	24	19	27	95
13:00	20	26	24	18	88
14:00	29	28	35	27	119
15:00	33	44	45	36	158
16:00	38	56	42	59	195
17:00	47	43	54	55	199
18:00	44	36	39	39	158
19:00	31	30	31	29	121
20:00	28	24	24	23	99
21:00	27	18	10	9	64
22:00	6	7	6	6	25
23:00	5	5	3	1	14
TOTAL:					2077

The A.M. peak hour from 7:15 to 8:15 is 187
The P.M. peak hour from 16:15 to 17:15 is 204



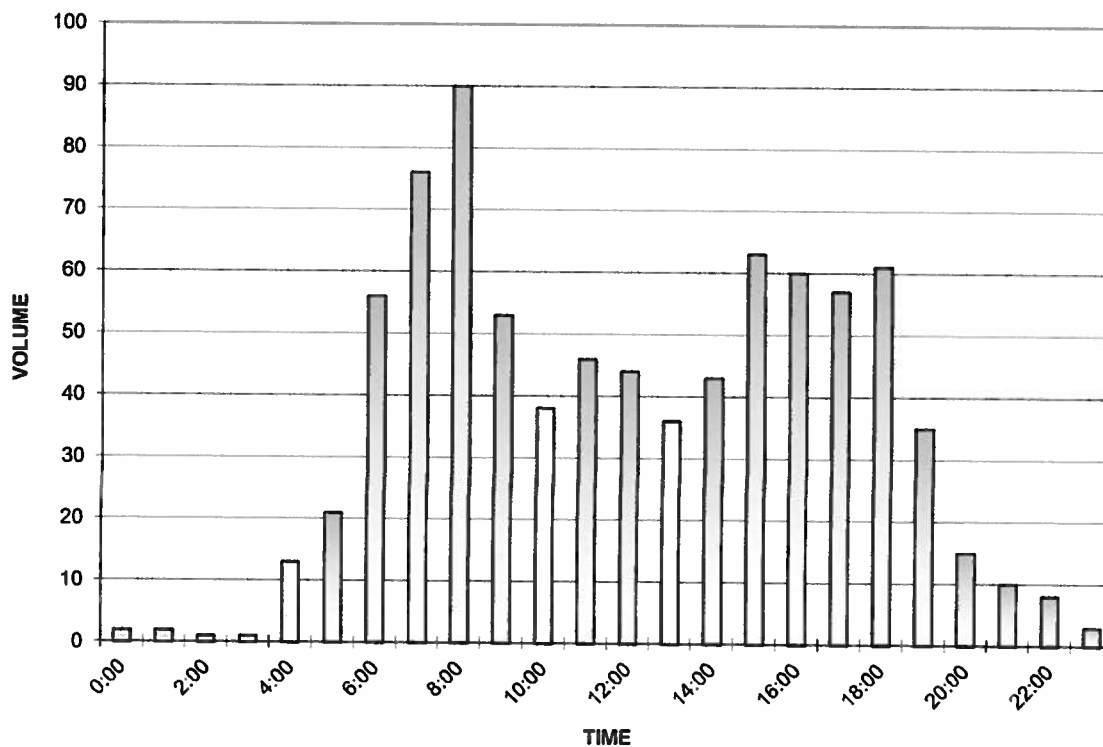
Date Began:
12/4/2013

Eastbound Seaward Drive west of Lakeside Drive

TIME	0:00	0:15	0:30	0:45	TOTAL
0:00	0	1	0	1	2
1:00	1	1	0	0	2
2:00	0	1	0	0	1
3:00	0	0	0	1	1
4:00	1	2	3	7	13
5:00	1	5	8	7	21
6:00	10	11	12	23	56
7:00	17	25	10	24	76
8:00	27	14	27	22	90
9:00	16	14	11	12	53
10:00	8	16	5	9	38
11:00	16	7	11	12	46
12:00	15	10	12	7	44
13:00	11	7	7	11	36
14:00	9	14	11	9	43
15:00	17	14	11	21	63
16:00	12	15	14	19	60
17:00	14	9	19	15	57
18:00	19	19	14	9	61
19:00	15	11	6	3	35
20:00	4	4	3	4	15
21:00	1	3	4	2	10
22:00	2	3	1	2	8
23:00	2	0	0	1	3

TOTAL: 834

The A.M. peak hour from 7:45 to 8:45 is 92
The P.M. peak hour from 17:30 to 18:30 is 72



Traffic Survey — Count Analysis**2006 TMUTCD Multi-Way Stop Warrants**County: HarrisDistrict: N/ACity: SeabrookPopulation: >10,000Survey Date: 12/4/13

	Route #	Name	Approach Lanes	85% Speed
Major		Lakeside Dr	2 lanes	30 mph
Minor		Wild Oak Forest Ln	1 lane	xx mph

Eight Highest Hours: Include the same 8 hours for the Major and Minor St. volumes.

Time Ends	Major St. Both Approaches	Minor St. Both Approaches			Comments:
	Veh. Total	Veh. Total	Bike Total	Ped. Total	
1st	310	42	-	-	Due to sight distance restrictions for the westbound Wild Oak Forest Ln approach, multi-way stop control is recommended for this intersection.
2nd	690	27	-	-	
3rd	494	21	-	-	
4th	329	20	-	-	
5th	197	20	-	-	
6th	250	19	-	-	
7th	193	19	-	-	
8th	340	15	-	-	
Average	351	23	-	-	

Average Vehicle Volume

Average Vehicles Per Hour on Major St (Total of Both Approaches)				Average Units Per Hour on Minor St (Total of Both Approaches)			
Required			Existing 117.0%	Required			Existing 11.5%
100%	80%	70%		100%	80%	70%	
300	240	210	351	200	160	140	23

Eight Hour Vehicular Volume Average Warrant

☐ Yes ☒ No Meets 100% of eight-hour average vehicle volume on major street and minor street.
— or —

☐ Yes ☒ No Meets 70% of eight-hour average vehicle volume on major street and minor street, and major street 85th percentile speed exceeds 40 mph.
— or —

☐ Yes ☐ No Meets 80% of eight-hour average vehicle volume on major street and minor street, and there have been 4 or more crashes susceptible to correction by a traffic signal in a 12 month period.

Interim Condition Warrant

☐ Yes ☐ No Is a traffic signal warranted and are arrangements being made for its installation?

Crash Experience Warrant

☐ Yes ☐ No Have there been more than 5 crashes susceptible to correction by a traffic signal in 12 months?

Other Considerations

☐ Yes ☒ No Is there a need to control left-turn conflicts?

☐ Yes ☐ No Is there a need to control vehicle/pedestrian conflicts and is the intersection near a location generating high pedestrian volumes?

☒ Yes ☐ No Is a road user, after stopping, unable to see conflicting traffic and is unable to reasonably safely negotiate the intersection unless conflicting cross traffic is also required to stop?

☐ Yes ☒ No Is the intersection composed of two residential neighborhood collector streets of similar design and operating characteristics where multi-way stop control would improve operations?

Traffic Survey — Count Analysis

2006 TMUTCD Multi-Way Stop Warrants

County: HarrisDistrict: N/ACity: SeabrookPopulation: >10,000Survey Date: 12/4/13

	Route #	Name	Approach Lanes	85% Speed
Major		Lakeside Dr	2 lanes	30 mph
Minor		Seaward Dr	1 lane	xx mph

Eight Highest Hours: Include the same 8 hours for the Major and Minor St. volumes.

Time Ends	Major St. Both Approaches	Minor St. Both Approaches		
	Veh. Total	Veh. Total	Bike Total	Ped. Total
1st	257	114	-	-
2nd	277	93	-	-
3rd	676	86	-	-
4th	294	80	-	-
5th	468	77	-	-
6th	171	73	-	-
7th	479	69	-	-
8th	133	67	-	-
Average	345	83	-	-

Comments:

Multi-way stop control is NOT recommended for this intersection.

Average Vehicle Volume

Average Vehicles Per Hour on Major St (Total of Both Approaches)				Average Units Per Hour on Minor St (Total of Both Approaches)			
Required			Existing 115.0%	Required			Existing 41.5%
100%	80%	70%		100%	80%	70%	
300	240	210	345	200	160	140	83

Eight Hour Vehicular Volume Average Warrant

☐ Yes ☒ No Meets 100% of eight-hour average vehicle volume on major street and minor street.
— or —

☐ Yes ☒ No Meets 70% of eight-hour average vehicle volume on major street and minor street, and major street 85th percentile speed exceeds 40 mph.
— or —

☐ Yes ☐ No Meets 80% of eight-hour average vehicle volume on major street and minor street, and there have been 4 or more crashes susceptible to correction by a traffic signal in a 12 month period.

Interim Condition Warrant

☐ Yes ☐ No Is a traffic signal warranted and are arrangements being made for its installation?

Crash Experience Warrant

☐ Yes ☐ No Have there been more than 5 crashes susceptible to correction by a traffic signal in 12 months?

Other Considerations

☐ Yes ☒ No Is there a need to control left-turn conflicts?

☐ Yes ☐ No Is there a need to control vehicle/pedestrian conflicts and is the intersection near a location generating high pedestrian volumes?

☐ Yes ☒ No Is a road user, after stopping, unable to see conflicting traffic and is unable to reasonably safely negotiate the intersection unless conflicting cross traffic is also required to stop?

☐ Yes ☒ No Is the intersection composed of two residential neighborhood collector streets of similar design and operating characteristics where multi-way stop control would improve operations?